

Amendments to the Claims:

The following listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Amended) A controlled drug release electrode system comprising an electrode bearing a bi-layer coating, the bi-layer coating comprising a doped electro-active polymer layer on the electrode a water-insoluble overlayer on the doped electro-active polymer layer, the doped electro-active polymer layer comprising an electro-active polymer doped with an ionic exchangeable releasable dopant and the overlayer being substantially impermeable to said dopant.
2. (Previously Amended) The electrode system of claim 1 wherein said overlayer is of a thickness sufficient to be substantially impermeable to said dopant.
3. (Previously Amended) The system of claim 1 wherein said overlayer comprises a polymer.
4. (Currently Amended) The system of claim 3 wherein said polymer comprises poly(vinyl butyral), ~~sulfonated polytetrafluoroethylene~~ perfluorosulfonic acid/PTFE copolymer, or poly(vinyl acetate).
5. (Original) The system of claim 4 wherein the poly(vinyl acetate) is at the most 88% hydrolyzed.
6. (Original) The system of claim 4 wherein the poly(vinyl acetate) is less than or equal to 40% hydrolyzed.

BEST AVAILABLE COPY

U.S. Patent Application
Attorney Docket No. 41530/28291
Appl. No. 09/929,584
Express Mail Label No. EV482531030US

7-24. (Previously Withdrawn)

25. (Previously Amended) An article of manufacture comprising a controlled drug release electrode system as set forth in claim 1.

26. (Previously Amended) The article of manufacture of claim 25 where said article of manufacture is in contact with a patient 's skin.

27. (Original) The article of manufacture of claim 26 wherein an effective potential is applied to said electrode wherein said potential causes the release of said drug, making said drug effectively available to the patient.

28. (Previously Amended) The article of manufacture of claim 25 wherein said overlayer comprises a polymer made from hydrophobic material which is crosslinked.

29. (Previously Amended) The article of manufacture of claim 28 wherein said electro-active polymer comprises homopolymers and copolymers of polypyrrole, N-substituted pyrrole and C-substituted pyrrole.

30. (Previously Amended) The article of manufacture of claim 29 wherein said electro-active polymer comprises polypyrrole.

31-43. (Previously Withdrawn)

44. (Previously Amended) A dopant controlled release system comprising a bi-layer coating on an electrode, the bi-layer coating comprising (1) a layer of an electro-active polymer, the layer having a first surface in contact with the electrode and a second surface opposite the first surface, the electro-active polymer having an ionic exchangeable releasable

dopant thereon, and (2) an overlayer on the second surface that inhibits spontaneous release of said dopant.

45. (Original) The system of claim 44 wherein the overlayer is made of a hydrophobic material.

46. (Original) The system of claim 45 wherein the overlayer is highly networked.

47. (Original) The system of claim 46 wherein the overlayer is highly networked due to crosslinking.

48. (Currently Amended) The system of claim 45 wherein the overlayer is chosen from the group consisting of poly(vinyl butyral), poly(vinyl acetate), and ~~sulfonated polytetrafluoroethylene~~ perfluorosulfonic acid/PTFE.

49. (Original) The system of claim 48 wherein said electroactive polymer comprises homopolymers and copolymers of polypyrrole, N-substituted pyrrole and C-substituted pyrrole.

50. (Previously Amended) The system of claim 49 wherein said electro-active polymer comprises polypyrrole.

51. (Previously Amended) The system of claim 45 wherein said dopant is a biologically active ingredient.

52. (Previously Amended) The system of claim 51 wherein said biologically active ingredient is a pharmaceutical compound.

53. (Previously Amended) The system of claim 52 wherein said pharmaceutical compound is selected from the group consisting of nutritional supplements, anti-inflammatory agents(e.g. NSAIDS such as s-ibuprofen, ketoprofen, fenoprofen, indomethacin, meclofentamate, mefenamic acid, naproxen, phenylbutazone, piroxicam, tolmetin, sulindac, and dimethyl sulfoxide), antipyretics, anesthetics including benzocaine, pramoxine, dibucaine, diclonine, lidocaine, mepiracaine, prilocaine, and tetracaine; demulcents; analgesics including opiate analgesics, non-opiate analgesics, non-narcotic analgesics including acetaminophen and astringent including calamine, zinc oxide, tannic acid, Hamamelis water, zinc sulfate; natural or synthetic steroids including triamcinolone, acetonide, prednisone, beclomethasone dipropionate; asthmatic drugs including terbutaline sulfate, albuterol, leukotriene receptor antagonists; electrolytes, metals and minerals; antianxiety and antidepressant agents; antimicrobial and antiviral agents; antihistamines; immune-suppression agents; cholesterol-lowering agents; cardiac and high-blood pressure agents and mixtures thereof.

54. (Previously Presented) The electrode system of claim 1 wherein said overlayer is substantially free of the dopant.

55. (Previously Presented) The electrode system of claim 1 wherein said overlayer is substantially free of any dopant.

56. (Previously Presented) The electrode system of claim 25 wherein said overlayer is substantially free of the dopant.

57. (Previously Presented) The electrode system of claim 25 wherein said overlayer is substantially free of any dopant.

58. (Previously Presented) A coated substrate comprising a bi-layer coating on a substrate, the bi-layer comprising a doped electro-active polymer layer having a first surface in contact with the substrate and a second surface opposite the first surface, and water-